Appendix #2- DEQ-10-167F.

Public Comments and Agency Responses on Issues Relating to Matters Other than Enforceable Policies of the Virginia Coastal Zone Management Program

Federal Consistency Certification: Nuclear Regulatory Commission: Dominion Power Company, applicant: Combined Construction and Operating License and U.S. Army Corps of Engineers Permit for Third Reactor (Unit 3) at North Anna Power Station

May 9, 2011

In this Appendix, DEQ reprints parts of its April 11, 2011 Memo to Reviewing Agencies and other entities, which described public comments on matters other than the Enforceable Policies of the Virginia Coastal Zone Management Program and asked for reactions or analysis of the comments. Responses received are under "***Agency Responses***" following each of the five Topic Area discussions.

Agencies and entities responding to our April 11 memo are:

DEQ, Northern Regional Office
DEQ, Office of Waste Permitting and Compliance
Virginia Department of Health
Dominion Virginia Power Company.

In addition, the following agencies and entities were invited to comment:

Virginia Department of Conservation and Recreation
Virginia Department of Mines, Minerals, and Energy
Virginia Department of Emergency Management
Virginia Department of Transportation
Nuclear Regulatory Commission
Environmental Protection Agency
National Oceanic and Atmospheric Administration
Caroline County
Hanover County
King William County
Louisa County
Orange County
Spotsylvania County
Town of Mineral.

The reprint, with "agency responses" and "OEIR notes" inserted, follows.

The comments have been organized into the following topic areas:

Topic Area #1 – Health impacts of hot water discharge and chemicals.

Topic Area #2 – Nuclear safety and related matters including the Japan disaster
Topic Area #3 – Overall planning and anticipated resource demands
Topic Area #4 – Impacts on Louisa County's Infrastructure and Resources
Topic Area #5 – Use Dry Cooling for Unit 3

Topic Area #1. Health impacts of hot water and pollutants.

(a) Hot water discharge from reactors. FOLA was joined by at least 6 individual commenters in stating concerns that Dominion has discharged water from Units 1 and 2 that exceeds 104 degrees Fahrenheit (F.) in summer months. FOLA asks what the impacts would be on human health, inasmuch as the heated water occurs in connection with increased water demand for reactor cooling in the summer; addition of Unit 3 would exacerbate the existing problem. A second commenter indicates that Dominion continues to discharge water from Units 1 and 2 into the Lake at temperatures greater than 89 degrees F. FOLA states that high water temperatures allow for increases in bacterial growth and contamination by *e. coli* and also *naegleria fowleri*, a potentially fatal amoeba which proliferates at temperatures of 86 degrees F. and thrives at temperatures between 95 and 113 degrees. This commenter cites a Virginia Commonwealth University study (June/September 2006) which found that *n. fowleri* was present in the cooling lagoons and the main reservoir of the Lake. He states that thermal pollution has not been addressed.

Another commenter stated that she lives on the Lake shoreline and that the water temperature at the end of her dock is often over 100 degrees F. in August or even July. Many fish, including bass, blue gills, and catfish can be found floating "all over the place" during August. Often the hydrilla (a water plant) flourishes. The hot water sometimes scalds the skin if one goes swimming. The commenter indicates that these conditions do not even take Unit 3 into account (since it is not yet built or permitted).

Agency Responses: The Virginia Department of Health (VDH) made no additional comments following its earlier (January 5, 2011) comments on the FCC. In that correspondence, VDH provided background and comments as follows:

Background. VDH responded to DEQ requests for comments regarding potential health effects [sic] *that may result from increased water temperatures due to more waste heat discharge in a July 2006 letter to DEQ. DEQ, in its November 2006 letter to Dominion, included VDH comments and recommendations regarding heat-related concerns which were namely:*

- *Swimming in waters greater than 113 degrees F. may result in burns, depending on contact time.*
- *Swimming in waters greater than 104 degrees F. should be avoided.*
- *Waters greater than 95 degrees F. may increase the risk of acquiring primary amoebic meningoencephalitis (PAM) and people should avoid water exposure altogether or should avoid forceful entry of water up nasal passages.*

VDH in its July 2006 response to DEQ did not recommend that signs be posted warning the public of these concerns in portions of Lake Anna that have elevated temperatures.

Comments

- *Dominion states that the operation of a third nuclear reactor would not result in an increase in the amount of "detectable heat" in the lake (Dominion document, p. 32).*
- *Dominion states that "Lake Anna was created specifically to meet the water requirements for the NAPS." They further state that adverse effects on recreational use of the lake at Lake Anna State Park are not expected from construction and operation of a third nuclear reactor (Dominion document, p. 28).*
- *Elevated ambient water temperatures' potential to result in elevated public health risks is not specifically addressed.*
- *VDH previously recommended avoiding recreational swimming use in waters where temperatures were elevated. VDH did not recommend that warning signs be posted or similar public notification be incorporated by Dominion in its operational plans in 2006 comments to DEQ.*
- *VDH recommends warning signs be posted in areas where waters have exceeded or have the potential to exceed 104 degrees F. Supporting information on the areal extent of lake water that has exceeded or may exceed 104 degrees F. would further assist VDH in managing public health risks potentially related to Lake Anna.*
- *Dominion states that the water temperature would not increase in the lake. Based on this assertion, it is reasonable to assume that existing heat and microbial-related illness risks would not change if a third nuclear reactor was* [sic] *operating at NAPS.*

(b) Adding toxic substances to Lake Anna. FOLA cites Dominion's application statement as stating that Dominion plans to add concentrations of copper and tributyltin to the waste water discharge into the cooling lagoons as a result of Unit 3 cooling, (which does not currently exist), and that the concentrations of these pollutants would not be measurable using VDEQ analytical methods. In addition, Dominion plans to add chemicals and/or biocides that are commonly used for water treatment (e.g., for chlorination and /de-chlorination, anti-scaling, and corrosion protection). FOLA urges that the FCC include a condition that protects the public: that the effects on human health, fish, wildlife, and aquatic life when these chemicals are added to heated water where the public recreates should be known; and that appropriate limits must be placed on discharges of these pollutants.

Agency Responses:

(i) DEQ's Northern Regional Office stated, in a memo to OEIR dated April 28, 2011:

NRO has reviewed the comments with respect to VWP and VPDES regulations. All of the comments received as part of the CZM process have been previously received and addressed by DEQ as part of the VWPP and VPDES permit issuance processes.

In its "Summary of Staff Responses to Public Comments not within the Purview of the VWP Permit Program, DEQ-NRO stated the following:

The discharge of wastewater is not within the purview of the Virginia Water Protection Permit program, but is governed by the VPDES program. The discharge of any wastewater will be addressed in the facility's VPDES permit (page 5, item 14).

(ii) The Department of Health stated that it had no additional comments.

(iii) Dominion stated:

Issues related to pollutants in discharges from the North Anna Power Station are addressed through the Virginia Pollutant Discharge Elimination System (VPDES) permitting process. Potential water temperature effects on lake biota and human health associated with the operation of Unit 3 have been virtually eliminated by Dominion's decision to construct and use a hybrid cooling system. In Dominion's application to the U.S. Nuclear Regulatory Commission (NRC) for an Early Site Permit (September 2006), calculations determined the average water temperature increase at the end of the discharge canal due to discharge of blowdown from Unit 3 to be less than a hundredth of a degree Fahrenheit (<0.01^{o}F) during summer months when thermal impact would be most critical, and less than a tenth of a degree Fahrenheit (<0.1^{o}F) during the cooler months. The water temperature increase would dissipate to an undetectable level within a short distance of travel in the Waste Heat Treatment Facility (WHTF). The NRC's staff independently reviewed the analyses and agreed with the assessment, and determined that waste heat input to Lake Anna from Unit 3 "…would not appreciably contribute to the thermal heating that already occurs in Lake Anna because of natural and man-made inputs" (NUREG-1811, December 2006). The NRC reviewed Dominion's analyses of "less than 0.1^{o}F" average rise in Lake Anna in the Supplemental Environmental Impact Statement for the Combined License (COL) and agreed with the assessment again. (NRC SEIS, February 2010). The combined flow from all three units directed into the discharge canal would result in immeasurable increased contribution from the Unit 3 blowdown anywhere in the WHTF, but to be conservative, NRC interpreted the delta to be "less than 0.1 degrees Fahrenheit" into Lake Anna through Dike 3 under normal conditions.

Specifically regarding comments that Dominion plans to add concentrations of copper and tributyltin (TBT) to wastewater discharge, neither constituent is expected to be present in discharges from the North Anna Power Station, including Unit 3, due to plant processes. Copper and TBT have been detected in samples from Lake Anna and, therefore, may be present as preexisting constituents in discharges from Unit 3 that use Lake Anna water. (Letter to OEIR, dated April 26, 2011, pages 1-2.)

Topic Area #2. Nuclear safety and related matters including the Japan disaster.

(a) The Japan connection. A number of commenters raised concerns about the addition of a third reactor at Lake Anna in light of the disaster at the nuclear energy plant in Japan. In the words of several, the earthquake in Japan and the resulting breach to the Fukushima nuclear reactor containment building, the possibility of a meltdown, and the continuing release of radioactivity is cause for alarm. The permits

and certifications by NRC and DEQ need to be put on hold until the environmental impacts associated with the Japanese reactor are evaluated and understood, according to at least 15 commenters. Several went further: the U.S. needs to develop lessons learned and incorporate them into future environmental studies, water permits, and federal consistency certifications so as to ensure the health, safety, and welfare of the 3 million annual visitors and residents of Lake Anna. Another commenter does not think the Japan situation would happen here, but that people and systems are always fallible and it is ridiculous to think we can anticipate all the possible ways a reactor could be compromised. Still another said that the Japan experience shows the difficulties of clustering reactors together at one site.

Agency Responses: Dominion stated (letter dated April 26, 2011, page 2) that nuclear safety issues are under the purview of the Nuclear Regulatory Commission (NRC); that the NRC is conducting a safety review of proposed Unit 3 in its licensing process; that the NRC has convened a task force to study the Japan incident, with short-term and long-term analyses of lessons that can be learned; and that Dominion and the rest of the U.S. nuclear industry is examining the capability of its nuclear units to shut down safely in the event there are similar events to those which took place at the Japanese plant.

(b) Nuclear waste disposal. Two commenters said that the waste disposal problem of spent nuclear fuel is not solved for the 100,000 years-plus of half life in which it can injure living tissue; that is a "bargain of power for about 30 years and potential injury for over 100 millennia," according to one of the commenters. Both said the bargain appears unethical to them. Two commenters urged that an environmental impact review be accomplished with regard to high-level nuclear waste storage at the North Anna Power Station, since the federal government failed in its obligation to remove that waste. In addition, low-level nuclear wastes are still stored at the facility because of the collapse of an interstate compact, and a review should cover these wastes, since no credible time frame for removal of low-level waste has been submitted.

Agency Responses: Dominion indicated (letter cited above) that nuclear waste disposal is a federal government responsibility, but that it is monitoring developments on the issue. Dominion states that it will continue to safely store its used fuel on site. The company has entered into a long-term agreement to take its low-level waste to a disposal facility in Clive, Utah; another agreement in 2009 gave Dominion the ability to transfer its low-level waste to a facility in Erwin, Tennessee. Processed low-level waste is transported to Texas for storage pending the completion of the facility in Tennessee.

(c) Emergency cooling needs. According to FOLA, computer modeling for the North Anna plant assumes there will always be enough water to cool the reactors. It does not take into account the possibility of an earthquake of greater than the designed values of the container buildings, along with an earthquake or attack causing a breach of the North Anna Dam, causing most or all of the water in Lake Anna to drain from the lake. The remaining on-site pond meant to supply cooling water to Units 1 and 2 would not necessarily have enough water to do so or to cool Unit 3 in addition. Moreover, it is not certain where the earthquake fault line runs, although one commenter states that in Charlottesville, she and her neighbors receive aftershocks from earthquakes originating

in the Mineral area near the Lake. It is also not certain, according to commenters, whether there is a back-up plan for the generators that power the pumps providing cooling water, if needed to safely shut down the reactors.

FOLA later cited a Nuclear Regulatory Commission calculation of the likelihood of nuclear reactor containment failures attributable to earthquakes ("Letter to the Editor," sent to DEQ on March 28). The list, covering 104 nuclear power stations in the nation, ranked the North Anna Power Station 7th in the nation, with a one in 22,727 (1:22,797) chance of a catastrophic earthquake. By way of comparison, the most susceptible power station was Indian Point 3 in Buchanan, New York, with a 1:10,000 chance. The Three Mile Island plant near Harrisburg, Pennsylvania was ranked 10th, with a 1:25,000 chance.

(d) Solar strike. One commenter mentioned recent news coverage of the possibility of a "solar strike," due to high sunspot activity in coming years, that knocks out external power to the nuclear plant. The plant would automatically shut down, but the cooling system would have to be kept going for days or weeks to prevent a meltdown of the nuclear core. Units 1 and 2 might not require external power, but proposed Unit 3 might.

(e) Radioactive waste storage. Two commenters pointed out that both low-level and high-level radioactive wastes are stored at the power plant, and are likely to stay there for another 50 years, given the failure to approve a federal waste site. They urge an environmental review of this continuing storage. The Virginia chapter of the Sierra Club indicates that there are no plans for the safe removal of this nuclear waste, and adds that the rate of cancers, especially childhood cancers, is higher near nuclear reactors than it is in other areas.

(f) Virginia Earthquake Zone. FOLA states that during the past several years, Virginia has experienced many different earthquakes, and asks the following questions about them:

(1) How many were predicted at the quake locations?

(2) Where does the current computer modeling forecast the earthquake fault line in relation to Lake Anna?

(3) Does Virginia have an experienced seismologist on staff or are we relying solely on data submitted by Dominion to define the earthquake fault line in relation to the North Anna site?

(4) What earthquake magnitude have the containment buildings for reactors 1 and 2 been designed to withstand?

(5) In light of the Japanese disaster, how have these projected earthquake magnitudes been updated?

(6) What is the current backup plan at Lake Anna if both the electric and backup generators fail and they cannot power the pumps to provide cooling water to safely shut down the reactors?

(7) Does Dominion have sufficient fire trucks on site that could easily be brought into service to help cool down all 3 reactors at the same time in the event of a disaster?

(8) How have these emergency plans been updated to incorporate more on-site pond water to also safely shut down the proposed 3rd reactor, when the design of the 3rd reactor will not be completed until sometime in 2013?

According to FOLA, these and many other environmental and safety questions should be responsibly answered and briefed to the public, with comments solicited before proceeding with Consistency Certifications and permits for the proposed 3rd reactor.

Agency Responses:

(i) *DEQ's Office of Waste Permitting and Compliance stated that the Japan disaster, nuclear waste disposal, and radioactive waste storage (respectively items a, b, and e of Topic Area #2 above) "are believed to be under the authority of the Nuclear Regulatory Commission (NRC) and the Virginia State Department of Health, and not the DEQ."*

(ii) Dominion stated (April 26, 2011 letter to OEIR, pages 2-3): Nuclear safety issues, such as those raised by comments included in this section, are under the purview of the NRC and have been, or will be, addressed through the NRC's regulatory processes. The safety review of the proposed Unit 3 is currently being carefully conducted by the NRC staff in a licensing process that includes opportunities for public participation.

The NRC is conducting its own review of the events that occurred at the Fukushima-Daiichi nuclear station in Japan. The NRC has created a Task Force to conduct both short-term and long-term analyses of the lessons that can be learned from the Fukushima-Daiichi accident. This review, which will include input from the public, should be completed in six to nine months. The NRC will use this review to establish any new requirements that it determines are necessary to protect the public health and safety. The NRC has also announced that it will assess seismic issues. An NRC fact sheet addressing seismic design for U.S. nuclear power stations is attached.

Simultaneously, Dominion, along with the rest of the nuclear industry in the U.S., is conducting a full-scale, systematic review of the capability of its nuclear units to safely shutdown if faced by events similar to those that occurred at Fukushima-Daiichi nuclear station in Japan. This review, conducted under guidance from the Institute for Nuclear Power Operations (INPO), is designed to verify and demonstrate that safety systems are in place and fully operable to safely mitigate the impact of such events at our facilities, and that plant staff are properly trained and tested on how to take such actions. Dominion has created a Beyond Design Basis Team involving several dozen nuclear engineers and technicians to conduct this extremely detailed review. The initial

response has been provided to INPO. Should additional guidelines or recommendations be issued by INPO, Dominion will provide additional responses in accordance with INPO's request.

Regarding comments about nuclear waste disposal, long-term storage of high-level nuclear waste is the responsibility of the federal government. The current administration is looking at new options to replace the proposed Yucca Mountain federal waste repository, and Dominion continues to monitor developments on this issue. In the interim, North Anna Power Station is and will continue to safely store its used fuel on site, utilizing both its spent fuel pools and dry cask storage. On low-level waste, Dominion (including the North Anna Power Station) has entered into a long-term agreement for the disposal of Class A low-level waste at the disposal facility in Clive, Utah. In 2009, an agreement was entered allowing for the transfer of Class B and C low level waste for processing at a facility in Erwin, TN. Processed low level waste is transported to Texas for storage until the new disposal facility is operational. Methods have been implemented to continually reduce the amount of low level waste generated at the North Anna Power Station.

Topic Area #3. Overall planning and anticipated resource demands. Public comments centered on present and future competing needs for water from the Lake Anna watershed, the lack of unified consideration of those needs, and how the proposed construction of Unit 3 would affect or impede their fulfillment.

(a) Comprehensive planning in the area. One commenter wrote that he was alarmed at the multiple developments around Lake Anna that announce broad plans to use the water for sewage, drinking water, and other needs. Each announcement justifies a project individually, with anecdotal reference to impacts, and presents its case to the most favorable approval authority, according to this commenter. Adding these developments to the Dominion plan without comprehensive oversight will affect the environmental quality of Lake Anna and the surrounding area. This person recommends an area plan to identify future developments, evaluate their impact on the Lake Anna area, and manage the situation with a monitoring manager. An authority should approve developments, with penalties for non-compliance with the plan.

(b) Downstream demands. Two commenters made reference to anticipated downstream water demands from Hanover County, the new State Fairgrounds therein, and possible expansion of King's Dominion; these and other things like agricultural expansion must be considered in reviewing the federal consistency certification for Unit 3. Moreover, since the Nuclear Regulatory Commission is not expected to review the combined construction and operating license until 2013, the commenter wants to know what the hurry is with regard to the matter.

(c) Additional stakeholders. According to two commenters, other stakeholders have not been fully considered. These include the following:

(1) Water needs of several counties – Louisa, Spotsylvania, Orange, and Hanover. These counties may need water from Lake Anna for drinking, fire suppression, and other purposes.

(2) Agricultural interests, both around the lake and downstream along the North Anna River and into the York River basin.

(3) Commercial interests, specifically the Virginia State Fair, which relies on downstream flows from Lake Anna, and (according to another commenter), potential expansion of the King's Dominion amusement park in Hanover County.

(4) Residential communities, which may need drinking water from the Lake and downstream flows.

In addition, one commenter indicated that if the plant is approved, electric rates will rise quickly and dramatically according to a formula approved by the General Assembly, and that such a rise in electricity costs will have a chilling effect on economic competitiveness.

(d) Planning efforts sought. FOLA commented that the cumulative effects of water withdrawals for construction and operation of the third reactor, a new sewage treatment plant for 5,000 - 7,000 construction workers, and Louisa County's request for Lake Anna water for human consumption require that DEQ and DCR conduct a comprehensive impact study before proceeding with any permits. This study should consider factors affecting water temperature, water usage, and impacts of both upon the Lake Anna environment.

FOLA also seeks a meaningful Lake Anna water management plan developed by the Commonwealth for maintaining water levels in the Lake. The plan would involve maintenance of the water levels of the cooling lagoons and main reservoir, using up-to-date technology and requiring automatic reporting of water levels when the main reservoir level is at 250 feet MSL or above. If the main reservoir falls below 250 feet MSL, then the cooling lagoons must be lowered by the same number of inches from 251.5 feet MSL.

(e) Assistance with County growth. FOLA urges that Dominion be required to provide money to Louisa County, if the company gains permission to build the third reactor, to provide for new schools and other local services that will be needed because of planned construction and its increases in population and need for services. FOLA points out that Dominion received federal money to assist with the processing of the Early Site Permit for Unit 3, so should not be allowed to burden Louisa County taxpayers. Similarly, FOLA asks that Dominion construct a sewage treatment facility, rather than using portable facilities and putting the waste in the existing sewage treatment plant. There is time to do this rather than burdening the county with extra sewage discharges into Lake Anna from the portable facilities because of Dominion's deferred decision on Unit 3 (until two or three years hence).

Agency Responses

(i) Dominion stated (letter to OEIR dated April 26, 2011, page 3): *The comments in this topic area focus primarily on water demands in the North Anna River watershed and a desire for comprehensive planning of water use. Water withdrawal and consumption issues related to Unit 3 are under the purview of the Virginia Water Protection (VWP)*

Program administered by the Virginia DEQ. Dominion has submitted two water withdrawal applications to the Virginia DEQ: one for a major water withdrawal for the operation of Unit 3 (#10-2001) and one for a minor water withdrawal for construction related uses (the permit for this use was recently issued by DEQ). The major water withdrawal permit application also addresses lake level issues associated with the operation of the North Anna Power Station. It should be noted that the construction and operational water withdrawals will not occur at the same time. Additionally, potable water supplied during construction and operation of Unit 3 will come from wells.

Dominion completed an Instream Flow Incremental Methodology (IFIM) study in 2009 to evaluate impacts of the operation of Unit 3 on beneficial uses of Lake Anna and the North Anna River downstream from Lake Anna. The IFIM study incorporated a review of existing downstream water withdrawals and the results have been incorporated into the VWP application for the Unit 3 operational water withdrawal. Through the VWP permitting process, Dominion's proposed operational water withdrawal will be evaluated in the context of existing water uses in the North Anna watershed.

Dominion has been made aware that Louisa County intends to apply to DEQ for a VWP permit to withdraw water from Lake Anna, possibly in the near future. Dominion created Lake Anna and the WHTF to support the operation of the North Anna Power Station and, consequently, Dominion does not support other consumptive withdrawals from the lake.

Topic Area #4. Impacts on Louisa County's infrastructure and state resources. Public comments, principally from FOLA, addressed the impacts of a third reactor upon the infrastructure of Louisa County and Lake Anna surroundings.

***(a) Height of dry and wet cooling towers and facility buildings*.** This height should not exceed the tree line, to protect the rural aesthetic atmosphere of the community (as Dominion indicated in a January 2006 stakeholder meeting).

(b) Impact on Roads and Schools. The impacts of employing 5,000 to 7,000 new workers (construction, periodic maintenance, professional) for 5 years on local roads and schools should be analyzed. This influx of additional people, as well as construction of three newly approved Louisa County subdivisions for about 1800 new homes in close proximity to the plant, will create the need for new expanded roads before the project begins. Since Dominion said it will not make a decision to build the 3rd reactor for another couple of years, FOLA recommends that Dominion provide sufficient monetary incentives to both Louisa County and the Virginia Department of Transportation to enhance the existing road system prior to beginning construction so the additional workers do not have an adverse effect on the local population and increase the tax burden upon local taxpayers.

(c) Other Local Services (police, fire, rescue squads, etc.). According to FOLA, other local infrastructure should be planned and built prior to any new tax levies on the local population. Louisa and Spotsylvania are among the fastest growing counties in the U.S. Louisa's population increased 29% between 2000 and 2010, while

the Commonwealth of Virginia only increased 13% during this time period. Since Dominion said it will not make a decision to build the 3rd reactor for another couple of years, FOLA asks that Dominion provide sufficient monetary incentives to Louisa County to improve local public services prior to beginning construction so that Dominion's workers do not adversely affect the local population or increase its tax burden.

(d) Updated emergency evacuation plans on the small two-lane roads surrounding the power plant. There is a need for an expanded road system to accommodate new workers and subdivisions. FOLA recommends that, prior to beginning construction, Dominion provide sufficient monetary incentives to Louisa and Spotsylvania Counties to enhance the current evacuation plans, including necessary improvements to existing infrastructure. The purpose would be, again, to ensure that Dominion's workers do not adversely affect the local population or increase its tax burden.

(e) Impact of additional fog and icing from wet cooling towers. The potential impact of additional fog and icing from wet cooling towers on local roadways is a major concern. According to FOLA, additional fog and icing will result from the 3rd reactor wet cooling towers, affecting people using local roadways. Dominion should provide sufficient monetary incentives to Louisa County and to the Commonwealth of Virginia to defray the additional cost associated with maintaining safe public roadways.

(f) Movement of excavated wetland material on Virginia Roads to a dump site. FOLA asks the following questions:

(1) How is DEQ coordinating with Louisa County and the Virginia Department Transportation to ensure that a bond is posted to cover the cost of any damage to Virginia roads (to be paid for by either Dominion or the bonding company) which results from moving heavy excavated material?

(2) Will extra traffic enforcement be required for this wetland material movement?

(3) How has DEQ coordinated with the local Louisa officials to mitigate this activity, and what provisions have been made for Dominion to pay for any additional law enforcement that is needed?

(g) Large Component Transport/ Impacts to both Mattaponi River and Virginia roads. FOLA questions why the existing rail line to the nuclear plant is not being used to transport all large components, as opposed to impacting both the Mattaponi River and Virginia roads. Rail lines are designed to accommodate major loads, while all of the small two lane roads in rural Virginia are not. FOLA anticipates damage to such roads from heavy loads and impacts on traffic flow. DEQ permits should include provisions which ensure that a bond is posted, that the applicant pays for any road damage, and that the damage does not become a tax burden for Virginia taxpayers.

Agency Responses:

(i) *According to DEQ's Division of Land Protection and Revitalization (formerly Waste Division), the earlier comments of that Division should address waste issues. Earlier comments were to the effect that no waste sites would be affected, or would affect, the construction of Unit 3. In these comments, the Division pointed out that the North Anna Power Station itself is a hazardous waste storage, treatment, or disposal facility (VAD065376279).*

(ii) Dominion stated (letter to OEIR dated April 26, 2011, pages 3-4): The comments in this topic area focus on concerns of impacts to local and state infrastructure and resources. The NRC licensing process addresses the primary concerns regarding the physical and financial impact of the proposed activity on infrastructure and resources. Additionally, issues associated with the Large Component Transport Route and disposal of excavated material have been addressed through the Joint Permit Application process for permits required by Virginia DEQ and the U.S. Army Corps of Engineers (USACE) for wetland and stream impacts. The NRC, DEQ and USACE permit processes all include opportunities for public participation.

In order to meet operational demands, the hybrid cooling tower will be taller than the existing tree line. However, the design and location of the tower on the site were chosen to be low profile, and it is expected that post-construction visual impacts would be small.

Dominion will obtain the necessary permits and approvals from VDOT with respect to the Large Component Transport Route. These approvals will take into account any modifications to the existing roadway system necessary to accommodate the transport of these components. The modifications are not expected to adversely impact water resources (wetlands/streams), threatened/endangered species, or cultural resources. Should existing roadways be damaged by the proposed hauling activities, Dominion will mitigate the areas as needed. Dominion will work with VDOT to ensure that damaged portions of public roadways, if any, have been properly identified and repaired. Upon completion of the proposed hauling activities, Dominion in cooperation with VDOT would return public roadways used as part of the transport route to their pre-existing conditions, if applicable.

Dominion does not anticipate the need to haul excavated materials offsite as part of the project. All dredge materials that are free of visual contaminants will be placed within the proposed laydown areas on the power station property and the adjacent Route 700 parcels that are also owned by Dominion. Should it be determined that potential fill materials contain contaminants, these materials will be staged at an appropriate location on-site, placed into sealed containers, hauled offsite and disposed at an approved landfill. Should the hauling of excavated materials be required, it is not anticipated that additional traffic or law enforcement will be necessary. Trucks hauling these materials will not be oversized and will be able to utilize existing public roadways without adversely impacting local residents and motorists. Dominion will obtain the necessary permits and approvals from VDOT with respect to hauling routes, if

applicable. Dominion would work with VDOT to ensure that damaged portions of public roadways, if any, have been properly identified and repaired.

Topic Area #5: Alternative Methods for Cooling Unit 3.

(a) Dry Cooling only for Unit 3. On March 15, 2011 (after the earthquake in Japan), FOLA submitted additional comments on the FCC. According to FOLA, the potential for dual disasters (e.g., an earthquake and the failure of back-up electric generators, making it impossible to pump cooling water and safely shut down reactors) striking the existing and proposed nuclear power plants at North Anna dictates that the proposed 3rd nuclear reactor should be cooled exclusively using dry air cooling (similar to Dominion's proposal for its 4th reactor during the Early Site Permit processing). Using dry air cooling would ensure that at a minimum one nuclear reactor (Unit 3) would still be operational if the lake were drained because of a dam breach and there was insufficient water in the lake to provide for cooling reactors 1 and 2. Note that the 1970 plans by Dominion for the North Anna Power Station indicated that it would take approximately 3 years to fill Lake Anna, since it is not adjacent to a free flowing river or ocean. This is also the approximate time period that all three reactors would be out of service if Unit 3 reactor cooling is not changed to dry cooling and a dual disaster were to strike the North Anna site.

(b) Use less Water for cooling. If Dominion were to use less water by employing the dry cooling mode for the 3rd unit more during the extreme summer, and they provided for Unit 3 (Maximum Water Conservation Mode) to give "operational flexibility during different times of the year," this approach could compensate for the approximately 25% of the time that the proposed 3-inch rise would not maintain the water levels at the existing surface elevations to dissipate the heat from Units 1 and 2.

(c) Reduce the heat discharged from the current two reactors and maintain lake design water levels in the cooling lagoons. During the past 4 years various Lake Anna organizations have met with Dominion, together with Louisa and Spotsylvania County officials, to encourage Dominion to adopt different techniques for reducing the high water temperatures from Units 1 and 2 discharges (at times over 104 degrees F. during the summer months when the public recreates) and also maintaining lake design water levels in the cooling lagoons. In all cases, Dominion acknowledged the technique, but never adopted any of them which would help in mitigating the problem. These techniques included:

1. Piping cool water (approximately 60 degrees F. in July, August, and September, caused by a thermocline) from the bottom of the lake (close to the dam) up the lake bed to the current two reactors to assist with the cooling.

2. Taking some of the heated discharge waters and spraying them in the discharge canal, so they would cool further before entering the first cooling lagoon.

3. Expanding the cooling towers for the 3rd reactor to provide for additional cooling of Units 1 and 2.

4. Reducing the heat output from Units 1 and 2 during a part of the summer months when the lake water exceeds unhealthy temperatures. Note that 99% of the discharged water re-circulates from the power plant through the cooling lagoons to Dike 3 and returns upstream in the main reservoir to the power plant for another cycle. Only 1% of the water goes over the dam and downstream. As a result, on each cycle the heated water gets hotter and hotter over the summer to reach unhealthy temperatures.

5. Keeping more water in the cooling lagoons of the lake to dissipate the heat and preserve more water in Lake Anna when we have abundant rainfall to compensate for the 3-year interval droughts we have been experiencing during the past decade. Automated technology available in 2011 could easily maintain and synchronize the Design Water Levels of 251.5 feet MSL in the cooling lagoons with the design water level of 250 feet MSL in the main reservoir (and similar fluctuations) by having automated locks (similar to those in canals/rivers throughout the U.S. and Europe.) These locks would control water flow at Dike 3 in coordination with turning pumps on and off that can circulate 2 million gallons of water per minute from Units 1 and 2; and the formula could be adjusted to accommodate the discharge from Unit 3.

6. Keeping more water in the cooling lagoons by using 1960's technology to manually insert or remove existing stop logs at Dike 3 in coordination with turning the circulating pumps on and off as indicated in item 5 above.

7. Eliminating the 100 hours of Dominion-requested time (in the water withdrawal request for Unit 3) to not operate the dry cooling mode (MWC) regardless of the lower lake level, which will only increase the water usage and increase water temperatures during the summer months when the public recreates on the lake and possibly create additional heat trauma to the public, fish, wildlife, and aquatic life.

In FOLA's judgment, the Virginia State Water Control Board should ensure that monitoring of compliance with the VPDES permit provisions begins at the end of the North Anna power plant discharge canal to protect the public.

Finally, FOLA believes that the U.S. Environmental Protection Agency (EPA) should re-evaluate the NPDES authority delegated to the Commonwealth of Virginia and ensure that the VPDES program is not less stringent then the national program. Federally delegated programs such as VPDES can be more stringent then the national program, but cannot be less.

Agency Responses

Dominion stated (Letter to OEIR dated April 26, 2011, pages 4-5): *Nuclear safety issues, including those related to cooling methods for Unit 3, are under the purview of the NRC and have been, or will be, addressed through the licensing process for Unit 3. Water withdrawal and water consumption issues related to the cooling towers for Unit 3 are under the purview of the VWP program. Dominion has submitted an application to*

the Virginia DEQ (#10-2001) for a major water withdrawal permit for the operation of Unit 3.

Dominion's selection of a combination wet and dry (hybrid) cooling tower system significantly reduces water use from what would be expected when using a conventional wet tower cooling system. The dry components of the proposed hybrid system allow for water savings during the Energy Conservation mode of operation and significant additional water savings when water inflow to the lake is reduced and the separate dry cooling tower is placed in service. The combination wet and dry system provides a good balance of environmental stewardship and energy conservation.

Dominion evaluated the alternative of a 100% dry cooling system for North Anna 3 and determined that the resulting system would consume over three times the energy of the proposed combination wet and dry cooling tower system. The cooling tower would also take up over four times the land area. Further, during hot summer days the all dry cooling system is very inefficient and would result in reduced generating capacity from the station. One variant of dry cooling, known as an "air-cooled condenser." was not considered for North Anna 3 because that technology has never been used for a nuclear power plant, or for any single unit power generating station of similar size.